

SERVICE MANUAL

STEREO RADIO
CASSETTE PLAYER

BASIC TAPE MECHANISM: 8ZM-3 P4NF

aiwa
S/M Code No. 09-99A-407-8R2

REVISION

SPECIFICATIONS

- Frequency range:** AM: 530/531 – 1,710/1,602 kHz (10/9 kHz step)
531 – 1,629 kHz (9 kHz step)
FM1, FM2: 87.5/87.5 – 108.1/108 MHz (200/50 kHz step)
76 – 108 MHz (100 kHz step in 76 – 90 MHz,
50 kHz step in 90 – 108 MHz)
- Maximum output:** 12 mW + 12 mW (EIAJ/32 ohms)
- Power source:** Battery DC 3V, size AA (R6) x 2
Domestic AC power (using optional AC adaptor: AIWA AC-D302)
- Battery life (EIAJ, 1 mW output, playback):**
Approx. 7 hours using size AA (R6P) manganese batteries
Approx. 24 hours using size AA (LR6) alkaline batteries
- Maximum dimensions (W x H x D):**
112.8 x 88 x 32.7 mm ($4\frac{1}{2}$ x $3\frac{1}{2}$ x $1\frac{5}{16}$ inches)
- Weight (excluding batteries):**
Approx. 140 g (4.9 oz)

- Design and specifications are subject to change without notice.

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF.NO	PARTNO.	KANRI NO.	DESCRIPTION
1	8Z-HRB-923-010	IB,YU(3L)S 491	
2	87-B30-254-010	HEADPHONE,HP-M007B(T)	
3	8Z-HRB-050-110	CLIP,BELT ASSY	

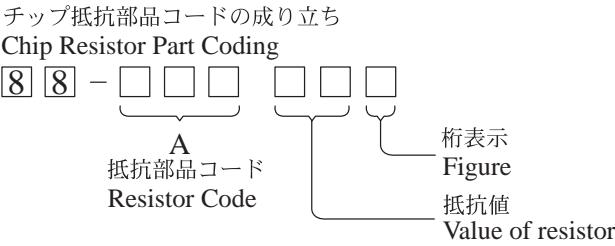
ELECTRICAL MAIN PARTS LIST

REF.NO	PARTNO	KANRI NO	DESCRIPTION	REF.NO	PARTNO.	KANRI NO.	DESCRIPTION
IC				C210	87-012-156-080		CAP,S 220P-50 CH
	87-002-423-080	IC,TA2002 FN		C212	87-012-286-080		CAP, U 0.01-25
	87-017-370-080	IC,MM1038AFF		C216	87-012-162-080		C-CAP,U 1P-50 CK
	87-A21-215-040	C-IC,TA2104AFN		C217	87-A10-047-080		C-CAP,U 1-10 Z F
	87-A21-272-010	C-IC,TC9318FB-046		C222	87-010-831-080		C-CAP,U,0.1-16F
	87-A20-904-080	C-IC,TK11823MTL		C224	87-012-274-080		CAP,U 1000P-50B
TRANSISTOR				C226	87-A10-047-080		C-CAP,U 1-10 Z F
	87-026-414-080	C-TR RN1370		C229	87-010-831-080		C-CAP,U,0.1-16F
	87-026-418-080	TR,RN1311 (0.1W)		C230	87-010-831-080		C-CAP,U,0.1-16F
	87-026-417-080	TR,RN1310		C231	87-010-959-080		CAP,U 0.056-16F
	89-113-625-080	TR,2SA1362GR(120MHZ,0)		C232	87-010-959-080		CHIP CAP,U 0.056-16F
	87-026-429-080	TR,RN2311		C233	87-012-287-080		CAP,U 0.015-25 F
	89-327-143-080	C-TR,2SC27140		C234	87-012-287-080		CAP,U 0.015-25 F
	89-341-165-080	CHIP TRANSISTOR 2SC4116GR		C235	87-A10-047-080		C-CAP,U 1-10 Z F
	87-026-411-080	C-TR RN1304		C236	87-A10-420-080		C-CAP,TN 4.7-4
	87-026-264-080	C-TR RN1411		C237	87-A10-047-080		C-CAP,U 1-10 Z F
DIODE				C239	87-A10-707-080		CAP,U 0.47-10F Z
	87-A40-642-040	C-DIODE,1SS367		C240	87-012-193-080		CAP,82P
	87-A40-630-040	C-DIODE,RB411D		C241	87-012-176-080		CAP 15P
	87-A40-485-070	C-VARI-CAP,SVC208		C242	87-010-574-080		CAP,S 470P-50 UJ
	87-A40-360-080	C-DIODE, MA786		C243	87-012-172-080		CAP,U 10P-50D CH
	87-A40-462-040	C-VARI-CAP,SVC347(S)		C244	87-010-831-080		C-CAP,U,0.1-16F
MAIN C.B				C245	87-012-272-080		CAP,U 680P-50 GRM
BPF201	87-A90-601-010	FLTR,BPF GFWB7		C248	87-012-195-080		CAP,U 100P-50CH
C001	87-012-274-080	C-CAP,U 1000P		C250	87-010-853-080		CAP,220-4V H5.5
C002	87-012-274-080	C-CAP,U 1000P		C251	87-012-195-080		CAP,U 100P-50CH
C003	87-A10-952-080	C-CAP,TN 22-4 M A MCM		C253	87-012-286-080		C-CAP,U 0.01-25 K B
C004	87-A10-952-080	C-CAP,TN 22-4 M A MCM		C290	87-010-787-080		CAP, U 0.022-25
C005	87-012-276-080	CAP, CHIP SS 1500 PBK		C301	87-012-277-080		CAP,U 1800P-50
C006	87-012-276-080	CAP, CHIP SS 1500 PBK		C302	87-012-277-080		C-CAP, U 1800P-50 B
C007	87-A10-504-080	C-CAP,U 0.047-16 K B		C303	87-012-277-080		C-CAP, U 1800P-50 B
C008	87-A10-504-080	C-CAP,U 0.047-16 K B		C304	87-012-277-080		C-CAP, U 1800P-50 B
C009	87-A10-047-080	C-CAP,U 1-10 Z F		C308	87-A10-047-080		C-CAP,U 1-10 Z F
C010	87-A10-047-080	C-CAP,U 1-10 Z F		C309	87-A10-047-080		C-CAP,U 1-10 Z F
C011	87-A10-047-080	C-CAP,U 1-10 Z F		C310	87-A10-047-080		C-CAP,U 1-10 Z F
C012	87-A10-047-080	C-CAP,U 1-10 Z F		C311	87-012-174-080		CAP CHIP CERA SS 12P CHJ
C013	87-012-336-080	CAP, CHIP SS 330P SL		C312	87-012-176-080		CAP 15P
C014	87-012-336-080	CAP, CHIP SS 330P SL		C313	87-A10-047-080		C-CAP,U 1-10 Z F
C015	87-010-831-080	C-CAP,U,0.1-16F		C314	87-010-831-080		C-CAP,U 0.1-16 Z F
C016	87-010-831-080	C-CAP,U,0.1-16F		C315	87-010-831-080		C-CAP,U 0.1-16 Z F
C017	87-010-831-080	C-CAP,U 0.1-16 Z F		C317	87-A10-047-080		C-CAP,U 1-10 Z F
C018	87-010-831-080	C-CAP,U 0.1-16 Z F		C318	87-016-462-080		C-CAP,S 1-16 F
C019	87-010-674-080	CAP, ELECT 220-2		C319	87-010-787-080		CAP, U 0.022-25
C020	87-010-674-080	CAP, ELECT 220-2		C320	87-010-505-080		CA, CHIP TANTALUM 1-16
C090	87-A10-047-080	C-CAP,U 1-10 Z F		C321	87-012-286-080		CAP, U 0.01-25
C092	87-010-831-080	C-CAP,U,0.1-16F		C322	87-012-337-080		C-CAP,U 56P-50 CH
C093	87-A11-244-080	C-CAP, TN 47-4 A MCM		C323	87-012-167-080		C-CAP,U 5P-50 CH
C094	87-A10-952-080	C-CAP,TN 22-4 M A MCM		C324	87-012-170-080		C-CAP,U 8P-50 CH
C095	87-010-853-080	C-CAP,220-4V H5.5		C325	87-012-188-080		CAP,U 47P-50 CH
C096	87-A10-047-080	C-CAP,U 1-10 Z F		C326	87-A10-047-080		C-CAP,U 1-10 Z F
C098	87-A10-047-080	C-CAP,U 1-10 Z F		C901	87-012-274-080		CHIP CAP,U 1000P-50B
C099	87-A10-422-080	C-CAP,TN 10-4 A TCF		C902	87-010-831-080		C-CAP,U,0.1-16F
C101	87-A10-047-080	CAP,U 1-10 ZF		C904	87-012-274-080		CAP,U 1000P
C102	87-012-274-080	C-CAP,U 1000P-50 K B		C999	87-012-270-080		CAP, U 470P-50
C103	87-A10-047-080	C-CAP,U 1-10 Z F		CF202	87-A91-343-010		FLTR,SK107M2N
C104	87-010-831-080	C-CAP,U,0.1-16F		CF203	87-A90-710-010		AM IF PFS450A3
C110	87-010-503-010	C-CAP,220-4V H5.5		CF204	87-A91-313-080		FLTR,CDACV10.7
C201	87-012-286-080	CAP, U 0.01-25		CT201	87-A91-183-080		TRIMMER,CER10P
C202	87-012-273-080	C-CAP,U 820P-50B		IFT201	87-005-788-080		IFT,AM 5M 5CLD
C203	87-012-172-080	C-CHIP U 10P CH		J001	87-A60-438-010		JACK,SW (1537)
C205	87-012-272-080	CAP,U 680P-50 B		J101	87-A60-849-010		JACK,DC DIA 2.75 BLK
C206	87-012-168-080	C-CAP,U 6P-50 CH		L001	87-003-231-080		C-COIL 1UH
C207	87-012-286-080	CAP, U 0.01-25		L002	87-003-231-080		C-COIL 1UH
				L003	87-003-231-080		C-COIL 1UH
				L101	87-A50-367-080		C-COIL, 10UH LQG21F
				L202	8Z-HRB-610-010		COIL,FM RF
				L204	8Z-HRB-609-010		COIL,FM OSC
				L206	87-HRA-603-010		BAR-ANT,MW
				L207	87-003-226-080		INDUCTOR 100UJ

ELECTRICAL MAIN PARTS LIST

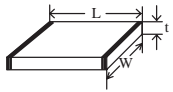
REFNO	PARTNO.	KANRI NO.	DESCRIPTION
L301	87-A50-230-080		COIL,D-D
LCD301	8Z-HR9-603-110		LCD,HS ASSY(BAND/TU)
R111	87-022-656-080		C-RES,K43G 0.68
S001	8Z-HRB-607-010		SW,SL 2-2-2 SSZZ-S-502(S)
S002	87-A90-050-010		SW, SL 2-2-2 NS (BLK)
S101	87-A91-077-010		SW,LEAF
S301	87-A91-320-080		SW,SL 1-1-2 SSSS8A2-B-2B(NC)
S302	87-A90-665-280		C-SW,TACT LS7A2M
S303	87-A90-665-280		C-SW,TACT LS7A2M
SFR101	87-024-050-010		SEMI-FIXED RESISTOR, 1K
TH101	87-A91-322-080		C-THMS,157-101-53028-TP
TH301	87-A90-547-080		C-THMS,47K (5%)NTH 5G
VR001	87-A90-818-010		VR,RTRY 20KCX2
X301	87-A70-187-010		VIB,XTAL 75KHZ CFV206

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

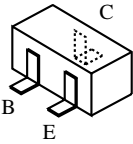


チップ抵抗

Chip resistor

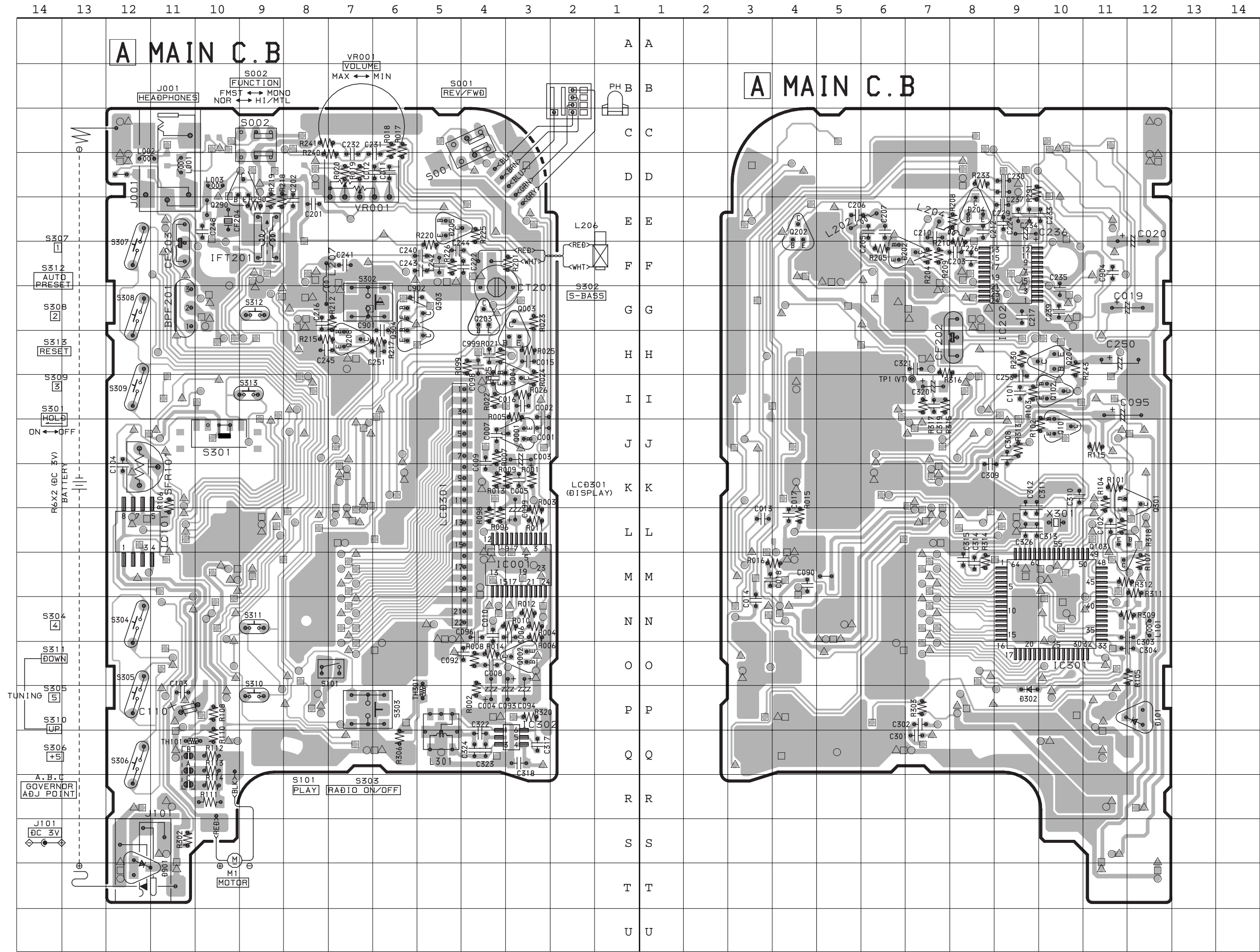
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION

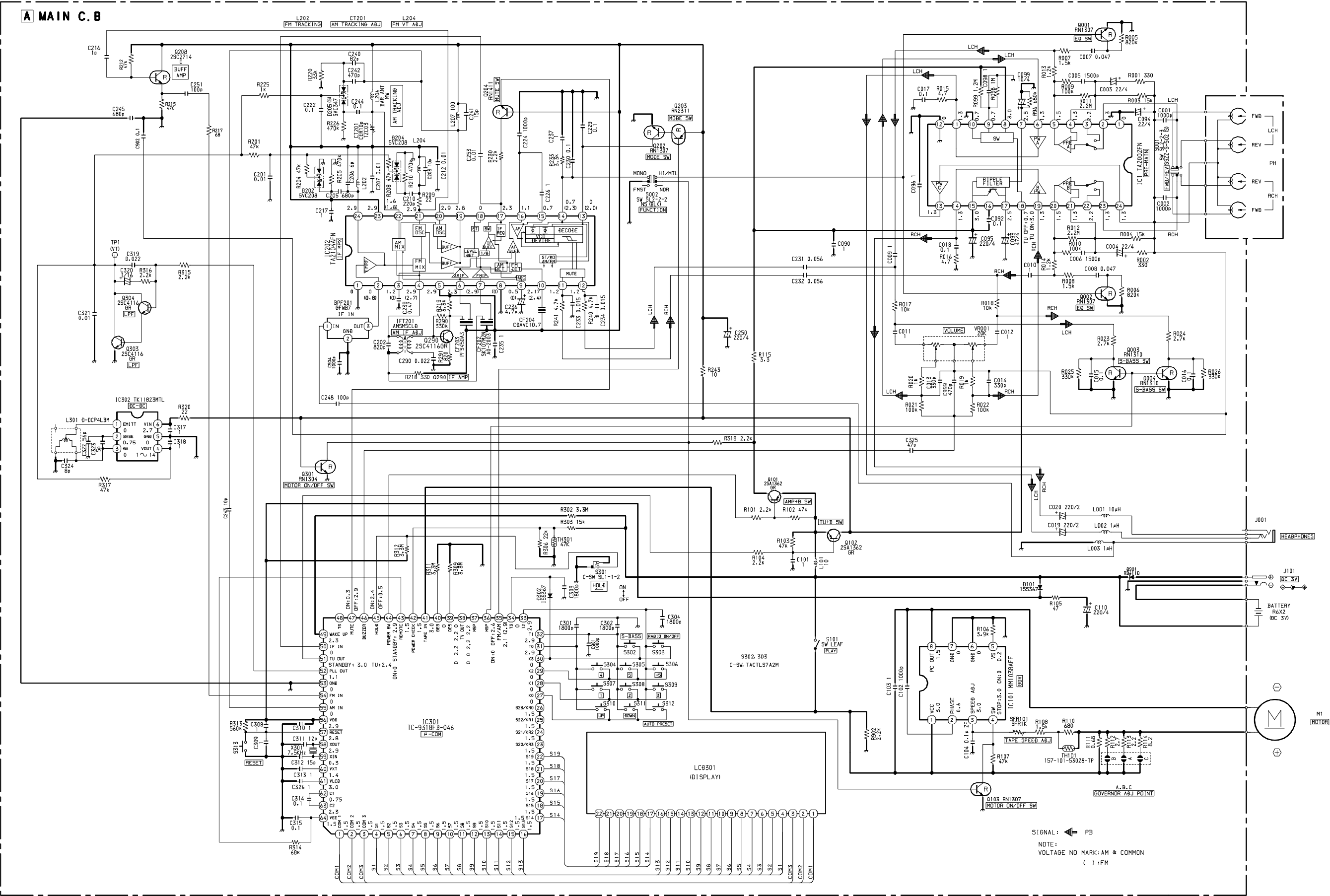


2SA1362GR	RN1311
2SC2714O	RN1370
2SC4116GR	RN1411
RN1304	RN2311
RN1310	

WIRING (MAIN)

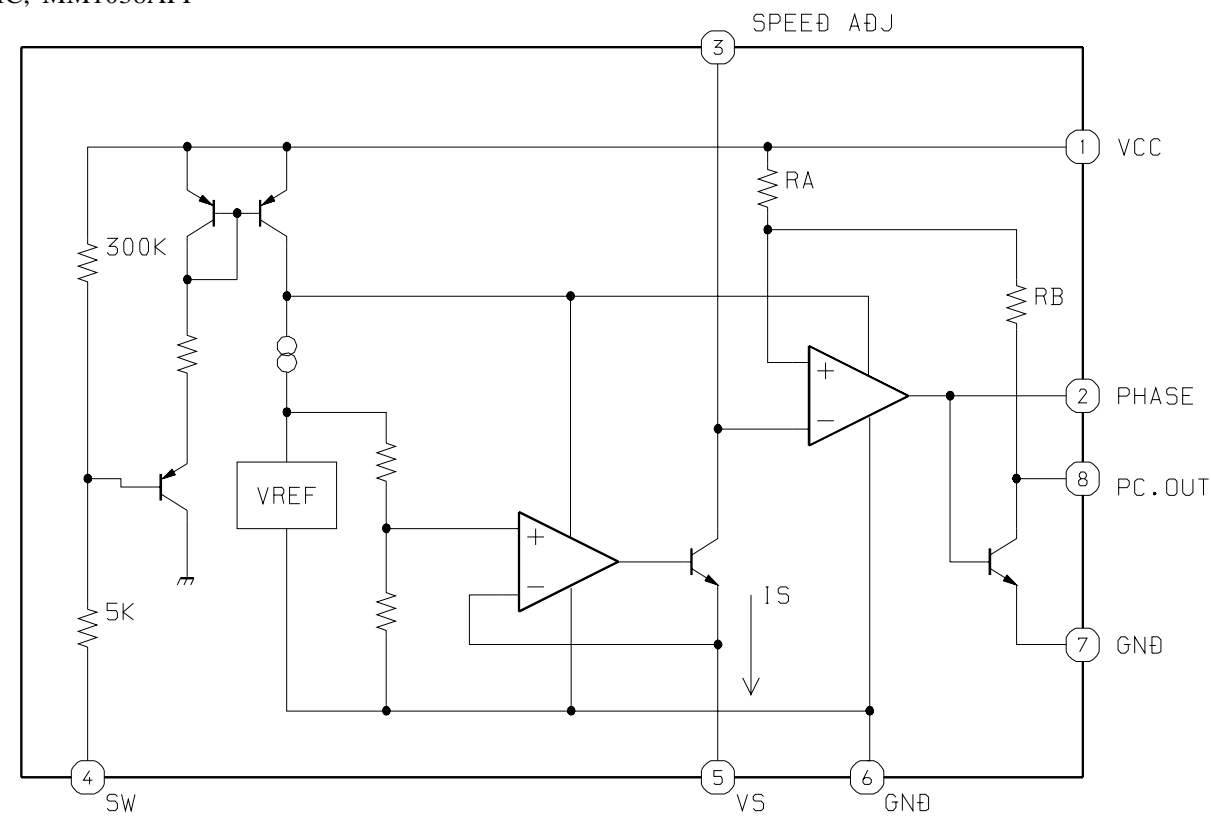


SCHEMATIC DIAGRAM (MAIN)

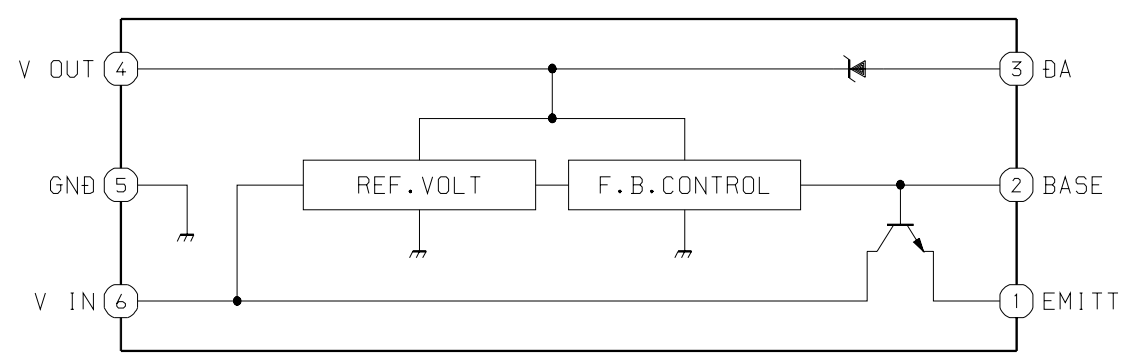


IC BLOCK DIAGRAM

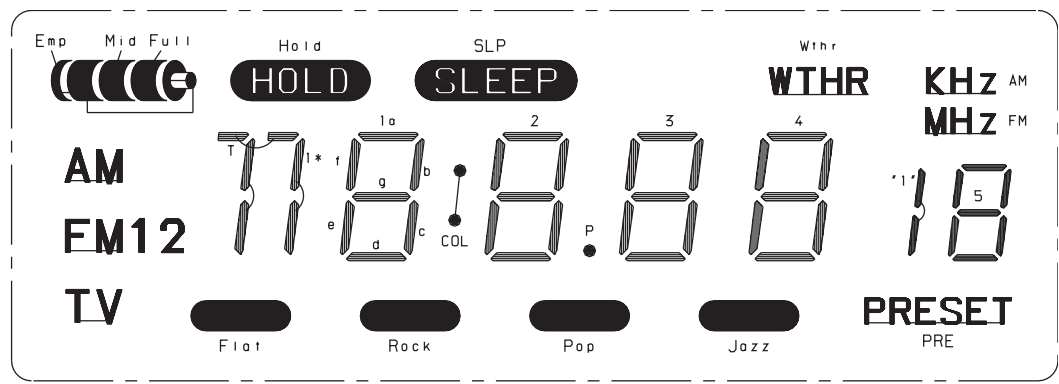
IC, MM1038AFF



IC, TK11823MTL



LCD DIAGRAM



NO	COM1	COM2	COM3
1	COM1	---	---
2	---	COM2	---
3	---	---	COM3
4	Wthr	FM	AM
5	TV	2	1
6	Flat	Mid	Emp
7	1*	T	Full
8	1e	1f	Hold
9	1d	1g	1a
10	Rock	1c	1b
11	Col	SLP	3a
12	2e	2f	2a
13	2d	2g	2b
14	Pop	2c	3f
15	P	3e	3g
16	3d	3c	3b
17	Jazz	4f	---
18	4e	4g	4a
19	4d	4c	4b
20	PRE	5e	'1'
21	5d	5g	5f
22	5c	5b	5a

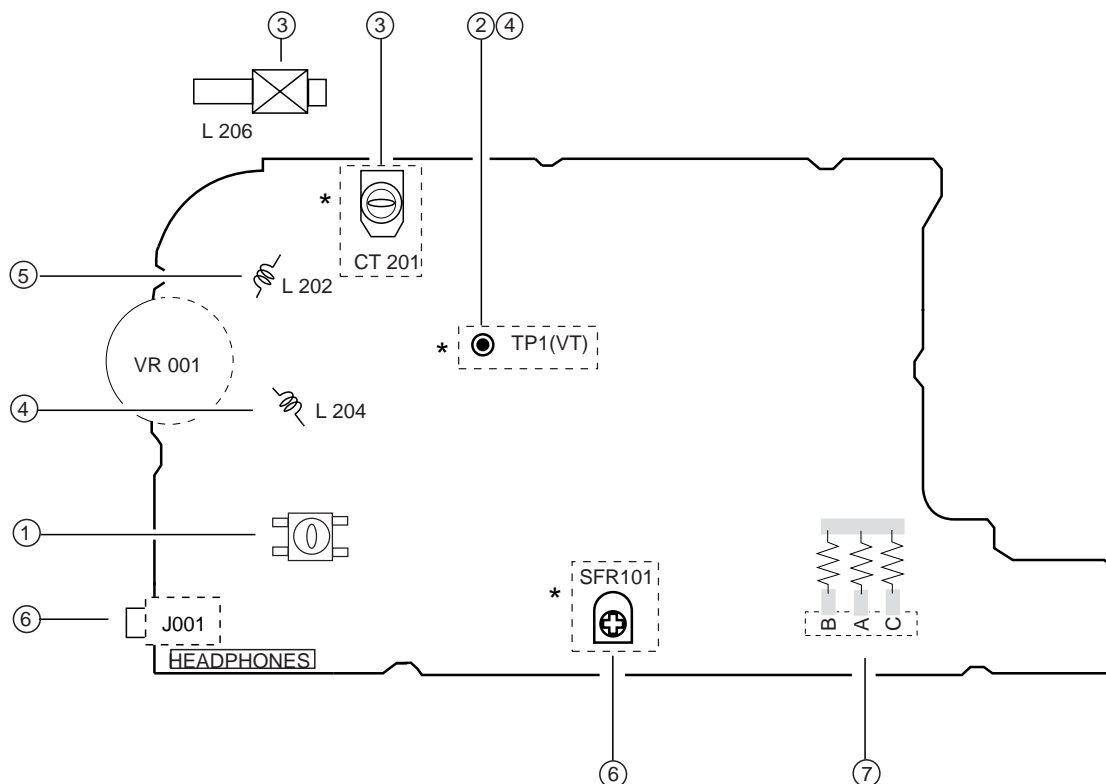
IC DESCRIPTION

IC, TC9318FB-046

Pin No.	Pin Name	I/O	Description
1 ~ 3	COM1 ~ COM3	O	LCD common output.
4 ~ 22	S1 ~ S19	O	LCD segment output.
23 ~ 26	S20 ~ S23	-	Not used.
27 ~ 30	K0 ~ K3	I	Key matrix input.
31 ~ 34	T0 ~ T3	O	Key return timing output.
35	FM/AM	O	'H': FM, 'L': AM
36	MSP	O	The output port is used for Super-Bass On/Off.
37	MSP	O	Not used.
38	TV OUT	O	Not used .
39,40	DES	I	These two ports combined with K0 ~ K3 determine the destination.
41	TAPE IN	I	'H': Tape ON, 'L': Tape OFF.
42	POWER CHECK	I	A/D in for power supply voltage level.
43	REMOTE	I	A/D in for remote controller.
44	POWER SW	O	'H': Power OFF, 'L': Power ON.
45	HOLD	I	'H': Hold ON, 'L': Hold OFF.
46	BUZZER	O	Buzzer output.
47	MUTE	O	Mute output.
48	TEST	-	Microcontroller test terminal (Not used).
49	WAKE UP	I	Wake up the system from memory back-up mode.
50	IF IN	I	IF frequency input.
51	TU OUT	O	'L': Tuner ON.
52	PLL OUT	O	Phase comparison output.
53	GND	-	GND.
54	FM IN	I	FM oscillator signal input.
55	AM IN	I	AM oscillator signal input.
56	VDD	-	Supply voltage terminal.
57	RESET	I	System reset input.
58	XOUT	O	Crystal oscillator pin.
59	XIN	I	
60	VXT	-	Power supply for crystal oscillator.
61	VLCD	-	Reference voltage for LCD driver (Not used).
62, 63	C1,C2	-	Voltage doubler boosting.
64	VEE	-	Constant 1.5V for LCD driver.

ADJUSTMENT

A MAIN C.B



NOTE:
*: On the other components side

<RADIO SECTION>

1. AM IF Adjustment
IFT201.....450kHz
2. AM VT Check
Settings: • Test point: TP1 (VT)
Method: Set to AM 530kHz and check that the test point is 1.0V-0.2/+0.3V. Then set to AM 1710kHz and check the test point is less than 10.0V.
3. AM Tracking Adjustment
L206.....630kHz
CT201.....1440kHz
4. FM VT Adjustment
Settings: • Test point TP1(VT)
• Adjustment locationL204
Method: Set to FM 76MHz and adjust L204 so that the test point becomes 0.9V±0.1V. Then set to FM 108.1MHz and check that the test point is less than 12.0V.
5. FM Tracking Adjustment
L202..... 87.5MHz

<TAPE PLAYER SECTION>

6. Tape Speed Adjustment

- Settings:
- Test tape : TTA-100
 - Test point : HEADPHONES (J001)
 - Adjustment location : SFR101
 - Supper BASS: OFF
 - Tape select: NORM
 - Direction: FWD
 - Volume: MAX-10dB

Method: Play back the test tape and adjust for 3000Hz \pm 60Hz (FWD) and confirm that REV speed is 3000Hz \pm 60Hz.

7. GOVERNOR Adjustment

Perform the STOP \rightarrow PLAY and REVERSE operations (or PAUSE ON \rightarrow OFF) after the motor is replaced.

When the tape starts running smooth, this adjustment is not necessary. If wow is conspicuous at the beginning of the tape-run, perform this adjustment following the procedures below.

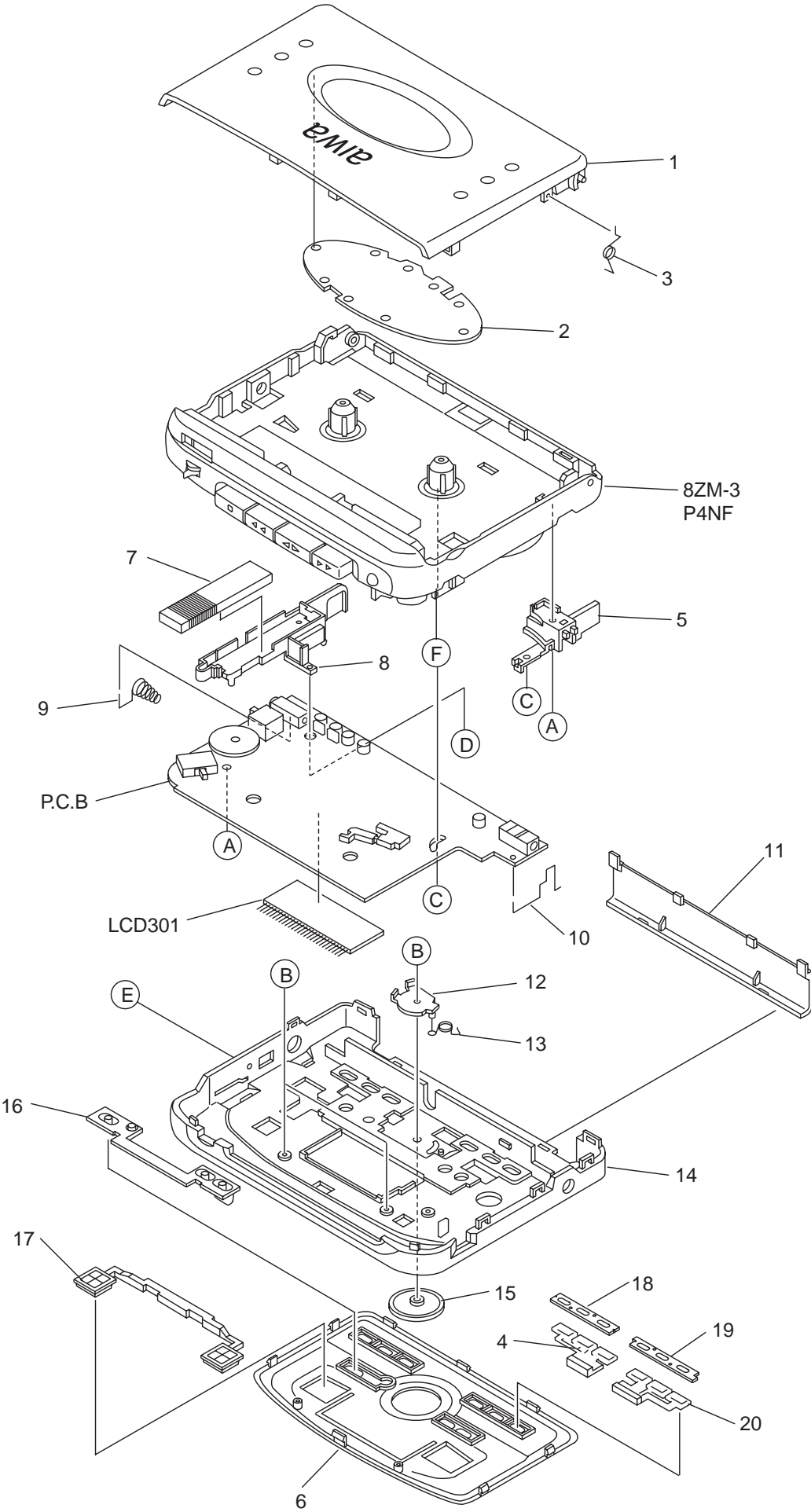
- 1) Solder resistor pattern of the MOTOR AND GOVERNOR MATCHING ADJ. resistor group.
- 2) Set the tape speed (using speed adjustment SFR101).
- 3) Restrict the motor rotation by hand(or turn PAUSE ON).
- 4) Remove your hand and listen to the beginning of the tape-run.
- 5) When the rise of tape running is smooth, no more adjustment is necessary.
If wow continues for 1 to 2 seconds at the rise time, change the combined resistance according to procedure 6) and check that the tape starts running smooth.
- 6) Solder the resistor pattern according to the table below:

Pattern	(Procedure 1 above)	Step (1)	Step (2)
High resistance(C)	Solder	Open	Solder
Medium resistance(B)	Solder	Open	Open
Low resistance(A)	Open	Solder	Solder

- 7) Finally re-check the tape speed.

Caution : Cool the patterns down to normal temperature after soldering. If the pattern remains heated, the governor circuit does not operate normally.

MECHANICAL EXPLODED VIEW 1/1



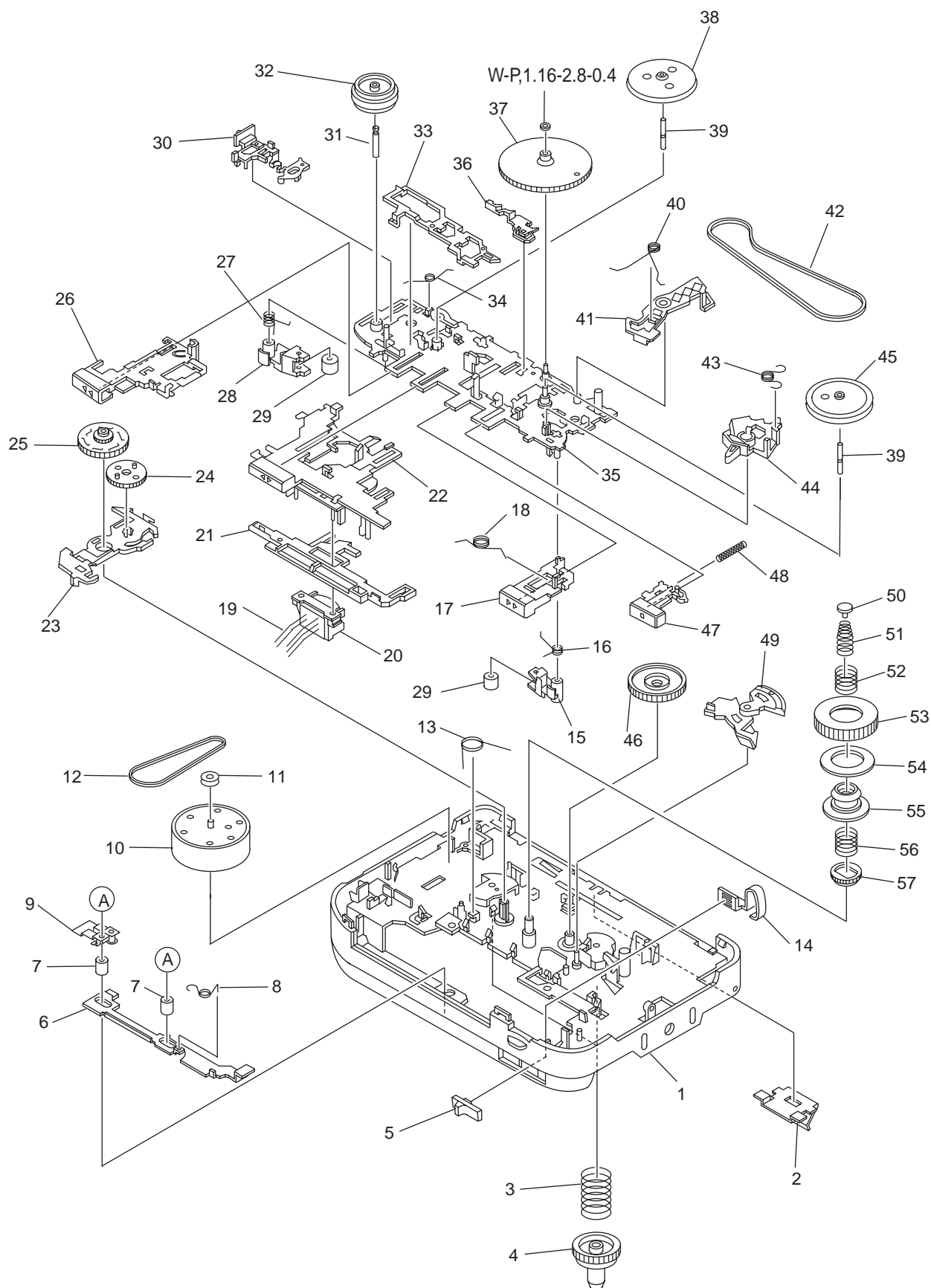
MECHANICAL PARTS LIST 1/1

REF.NO	PARTNO	KANRI NO	DESCRIPTION
1	8Z-HRB-047-010		LID,CASS TRP
2	8Z-HRB-048-010		WINDOW,CASS TPR
3	8Z-HRB-217-110		SPR-T,CASS
4	8Z-HRB-056-010		KEY,PRESET R TRP
5	8Z-HRB-202-110		HLDR,DC JACK
6	8Z-HRB-054-010		PANEL,REAR TRP
7	87-HRA-603-010		BAR-ANT,MW
8	8Z-HRB-201-110		HLDR,BAR-ANT
9	8Z-HRB-209-010		BAT-CONTACT,M
10	8Z-HRB-208-010		BAT-CONTACT,P
11	8Z-HRB-053-010		LID,BATT TRP
12	8Z-HRB-203-110		HLDR,KNOB RTRY
13	8Z-HRB-212-010		SPR-T,HOLD
14	8Z-HRB-052-010		CABI,REAR TRP
15	8Z-HRB-058-010		KNOB,RTRY TRP TRP
16	8Z-HRB-012-210		KEY,RBR TUN
17	8Z-HRB-055-010		KEY,BAND TRP
18	8Z-HRB-011-210		KEY,RBR PRESET R
19	8Z-HRB-009-210		KEY,RBR PRESET L
20	8Z-HRB-057-010		KEY,PRESET L TRP
A	87-B10-196-010		VT2+1.4-4 BLK (3) HL
B	87-067-384-010		SCREWVT1.4-3.5HL
C	87-264-527-310		V 1.7-3 SCREW
D	87-067-732-010		TAPPING SCREW, VT1.4-3
E	87-B10-048-010		VT2+1.4-3 (3) CR HL
F	8Z-HRB-223-010		W,2-9-0.5 W/ADH

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		

TAPE MECHANISM EXPLODED VIEW 1/1



TAPE MECHANISM PARTS LIST 1/1

REF.NO	PARTNO	KANRI NO	DESCRIPTION	REF.NO	PARTNO.	KANRI NO.	DESCRIPTION
1	8Z-HRB-049-010		FRAME,CENTER TRP	31	88-ZM3-267-010		SHAFT,PULLEY TWIN
2	8Z-HRB-207-110		SPR-P,CASS	32	88-ZM3-234-010		PULLEY,BELT TWIN
3	88-ZM3-253-110		SPR-C,BT L	33	88-ZM3-212-010		LEVER,LOCK
4	88-ZM3-274-010		GEAR,REEL A	34	88-ZM3-245-110		SPR-T,LOCK
5	8Z-HRB-014-110		KNOB,SL OPEN	35	88-ZM3-201-210		CHAS ASSY,OUTSERT P
6	8Z-HRB-204-110		LEVER,EJECT	36	88-ZM3-216-010		LEVER,SW
7	8Z-HRB-216-110		CAP, EJECT	37	88-ZM3-221-110		GEAR,AUTO
8	8Z-HRB-205-110		SPR-T,EJECT	38	88-ZM3-240-010		FLY-WHL,R S
9	8Z-HRB-215-010		SHAFT,ASSY	39	88-ZM3-266-010		CAPSTAN, 1.5-NS
10	87-A91-379-010		MOT,BCY3B-13	40	88-ZM3-248-010		SPR-T,AUTO CHOOSE
11	88-ZM3-236-010		PULLEY,MOT S	41	88-ZM3-215-110		LEVER,AUTO KICK
12	88-ZM3-263-210		BELT,S	42	88-ZM3-262-010		BELT,L
13	88-ZM3-243-010		SPR-T,PLAY BACK	43	88-ZM3-244-010		SPR-T,DIR
14	8Z-HRB-206-010		PLATE,EJECT	44	88-ZM3-219-010		BTN,DIR KNOB
15	88-ZM3-217-110		ARM,PINCH L	45	88-ZM3-239-010		FLY-WHL,L S
16	88-ZM3-241-110		SPR-T,PINCH L	46	88-ZM3-226-010		GEAR,IDLE
17	88-ZM3-003-110		LEVER,REW	47	88-ZM3-004-110		LEVER,STOP
18	88-ZM3-246-110		SPR-T,FF REW	48	88-ZM3-255-110		SPR-C,STOP
19	87-A80-115-010		F-CABLE,5P P2	49	88-ZM3-214-010		LEVER,AUTO FIND
20	87-A91-019-010		HEAD ASSY,PH 8ZM-3	50	88-ZM3-238-010		CAP,SLIP
21	88-ZM3-211-010		LEVER,DIR	51	88-ZM3-252-010		SPR-C,SHIFT
22	88-ZM3-001-110		LEVER,PLAY	52	88-ZM3-251-310		SPR-C,SLIP
23	88-ZM3-213-310		LEVER,T-UP	53	88-ZM3-222-110		GEAR,SLIP FAST
24	88-ZM3-225-110		GEAR,PLAY	54	88-ZM3-269-110		FELT,SLIP
25	88-ZM3-224-110		GEAR,TRANSMIT	55	88-ZM3-237-110		CLR,SLIP
26	88-ZM3-002-110		LEVER,FF	56	88-ZM3-247-010		SPR-T,AUTO FIND
27	88-ZM3-242-210		SPR-T,PINCH R	57	88-ZM3-223-010		GEAR,SLIP SLOW
28	88-ZM3-218-010		ARM,PINCH R	A	87-067-384-010		SCREWVT1.4-3.5HL
29	88-ZM3-271-010		ROLLER ASSY,PINCH				
30	88-ZM3-220-010		BTN,MODE SEL				

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サービス技術ニュース	
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